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TITLE: First assessments of ICESat-2 performance using aircraft data

PRESENTATION TYPE: Assigned by Committee (Oral or Poster)

CURRENT SECTION/FOCUS GROUP: Cryosphere (C)

CURRENT SESSION: C21. Monitoring Changes in Polar Ice Sheets and Sea Ice Using Airborne and Satellite Remote Sensing

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ABSTRACT BODY: The Ice, Cloud, and land Elevation Satellite-2 (ICESat-2) is a next-generation laser altimeter designed to continue key observations of ice sheet elevation change, sea ice freeboard, vegetation canopy height, earth surface elevation, and sea surface height. Scheduled for launch in early 2016, ICESat-2 will use a high repetition rate (~10 kHz), small footprint (10m diameter) laser, and a single-photon-sensitive detection strategy (photon counting) to measure precise ranges to the earth's surface. Operating in the green (~532nm), the six beams of ICESat-2 will provide improved spatial coverage compared with ICESat, while the differences in transmit energy among the beams provide a large dynamic range. In order to evaluate models of predicted ICESat-2 performance, and provide ICESat-2-like data for algorithm development, an airborne ICESat-2 simulator was developed and first flown in 2010. This simulator, the Multiple Altimeter Beam Experimental Lidar (MABEL) has now had three deployments in the western US, and will be deployed to the polar regions in spring of 2012. MABEL uses a similar measurement strategy to what will be used on ICESat-2. MABEL collects more spatially-dense data than ICESat-2 (~2-cm along track) with a smaller 2m diameter footprint in 16 green channels and an additional 8 channels in the infrared. The comparison between frequencies allows for analysis of possible penetration of green energy into water or snow. We present MABEL data collected over deserts, forests, ocean water, lakes, snow covered mountains, and salt flats, provide examples of how these data are being used to develop algorithms that derive geophysical products from ICESat-2 and assess expected performances.

<http://icesat.gsfc.nasa.gov/icesat2/mabel.php>

INDEX TERMS: [0758] CRYOSPHERE / Remote sensing, [0794] CRYOSPHERE / Instruments and techniques.

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Additional Details

Previously Presented Material:

Scheduling Request: